Remarks

Reexamination and reconsideration of this application is requested. Claims 6, 12 and 18 have been amended and no new claims have been added. Claims 6-21 remain in the application.

Response to the 35 U.S.C. §102(e) Rejection

The Office Action rejects claims 6, 7, 12-15 and 18-20 under 35 U.S.C. §102 (e) as anticipated by Vareljian (US 6,480,532 B1).

Vareljian discloses an echo cancellation circuit where an adaptive filter generates an echo cancellation signal. The adaptive filter provides a transfer function substantially matching the echo transfer function and the unwanted echo component that corrupts the analog receive signal. Vareljian states in column 4, lines 54-60, that the echo problem arises at the twisted pair line interface, where a portion of the transmit signal may be reflected, for example, and appear within the received signal.

Applicant's independent claims 6, 12 and 18 have been amended to overcome the prior art of reference. For instance, claim 6 now recites an Analog-to-Digital Converter (ADC) to convert data having a first over-the-air interface standard as received in a receiver path and a Digital-to-Analog Converter (DAC) to convert data having a second over-the-air interface standard to be transmitted in a transmitter path.

Support for this amendment to claim 6 can be found in the figure and on page 5, lines 2-11, of the specification where the integrated RF front end of the transceiver may simultaneously carry both Bluetooth signals and IEEE 802.11 signals which are over-the-air interface standards.

Whereas Vareljian teaches a twisted pair interface, Applicant's claim 6 recites an over-the-air interface. Further, Vareljian teaches transmitting a signal and providing an echo cancellation circuit to provide cancellation of the "echo" portion of that same signal. In contrast, Applicant's claim 6 recites a signal having a first standard in the receiver and a signal having a second standard in the transmitter. Applicant's cancellation circuit in claim 6 injects an out-of-phase signal into the receiver path to cancel at least a portion of interference from the transmitter path. Thus, Applicant's claim 6 at least provides signal interference reduction even when the transmitter provides a signal having one

standard while the receiver processes a signal having a different standard. It is respectfully pointed out that the signal having the first standard is not an "echo" of the signal having the second standard.

Applicant believes that at least these features of an over-the-air interface and the receiver and transmitter having signals with different standards are not taught by the relied upon reference. Since Vareljian does not teach these features, the relied upon reference cannot anticipate Applicant's claim 6. Claims 7-11 depend, either directly or indirectly, from base claim 6 and are believed allowable for at least the same reasons as claim 6.

Response to the 35 U.S.C. §102(b) Rejection

The Office Action rejects claims 12-15 and 18-20 under 35 U.S.C. §102 (b) as anticipated by Marcos (US 4,891,801).

The Examiner points out that Marcos et al. discloses cancellation of an interfering signal caused by echo. Applicant agrees with the Examiner that Marcos teaches a wired interface, transmitting a signal through the interface and providing circuitry to cancel the "echo" or reflected signal.

Applicant's amended claim 12 includes language that recites a transmitter analog signal having a first over-the-air interface standard and a receiver analog signal having a second over-the-air interface standard. Applicant's amended claim 18 includes language that recites the analog signal in the transmitter and the signal received by the receiver have differing over-the-air interface standards. In contrast to Marcos teaching a signal having one standard and an echo received having the same standard, Applicant claims differing over-the-air interface standards in the transceiver at the same time. The cancellation circuit then mitigates interference by using the signals having the first and second standards.

Applicant believes that at least these features of an over-the-air interface and the receiver and transmitter having signals with different standards are not taught by the relied upon reference. Since Marcos does not teach these features, the relied upon reference cannot anticipate Applicant's claims 12 and 18. Claims 13-17 depend from base claim 12 and claims 19-21 depend, either directly or indirectly, from base claim 18, and are believed allowable for at least the same reasons as respective base claims 12 and 18.

Response to the 35 U.S.C. §103(a) Rejection

The Office Action rejects claims 6-21 under 35 U.S.C. §103 (a) as being unpatentable over Smith (US 5,444,864) in view of Kenworthy (US 5,691,978). Applicant respectfully traverses this rejection in view of the reasons stated below.

Rejection of Claims 6-11

Applicant believes the rejection of claims 6-11 has been overcome in view of the remarks that follow.

Applicant's claim 6 recites, among other things, an Analog-to-Digital Converter (ADC) to convert data having a first over-the-air interface standard as received in a receiver path and a Digital-to-Analog Converter (DAC) to convert data having a second over-the-air interface standard to be transmitted in a transmitter path.

Smith teaches in column 2, lines 31-36, that some part of the transmitted signal will leak through the diplexer to the receiver and mix with the received signal. This unwanted interference is cancelled by signal canceller 12. The relied upon reference of Kenworthy discloses an RF communication system having a digital adaptive filtering to cancel interference. Self-interference is cancelled using a combination of antenna placement, analog RF suppression and digital adaptive filtering.

It is well established that obviousness requires a teaching or a suggestion by the relied upon prior art of all the elements of a claim (M.P.E.P. §2142). Applicant respectfully submits that neither Smith nor Kenworthy teach a first over-the-air interface standard in a receiver path and a second over-the-air interface standard in a transmitter path. These features are included in Applicant's claim 6. Thus, the relied upon references do not meet the requirements to establish an obvious rejection. Thus, at a minimum, the rejection of claim 6 is improper in that Smith and Kenworthy fail to teach or suggest every feature of that claim.

Applicant's claims 7-11 depend from base claim 6 and are believed to be allowable over the relied upon reference for at least the same reasons as claim 6.

Rejection of Claims 12-17

Applicant believes the rejection of claims 12-17 has been overcome in view of the remarks that follow.

Applicant's claim 12 recites, among other things, a transmit path to receive transmitter digital data to convert to a transmitter analog signal having a first over-the-air interface standard and a receive path to receive a receiver analog signal having a second over-the-air interface standard to convert to receiver digital data.

Again, Applicant respectfully submits that neither Smith nor Kenworthy teach a first over-the-air interface standard and a second over-the-air interface standard as included in Applicant's claim 12. Accordingly, the relied upon references do not meet the requirements to establish an obvious rejection, and therefore, the rejection of claim 12 is improper in that Smith and Kenworthy fail to teach or suggest every feature of claim 12.

Applicant's claims 13-17 depend from base claim 12 and are believed to be allowable over the relied upon reference for at least the same reasons as amended claim 12.

Rejection of Claims 18-21

Applicant believes the rejection of claims 18-21 has been overcome in view of amendment to claim 18 and the remarks that follow.

Applicant's amended claim 18 recites, among other things, converting a signal received by a receiver that contains a portion of the analog signal as interference to a second digital value, where the analog signal in the transmitter and the signal received by the receiver have differing over-the-air interface standards.

As previously mentioned, neither Smith nor Kenworthy teach differing over-the-air standards. Accordingly, the relied upon references do not meet the requirements to establish an obvious rejection, and therefore, the rejection of claim 18 is improper in that Smith and Kenworthy fail to teach or suggest every feature of claim 18. Thus, the relied upon references, either taken singularly or in combination, have failed to show at least this feature of Applicant's claim 18, and therefore, cannot make Applicant's claim 18 obvious.

Applicant's claims 19-21 depend from amended base claim 18 and are believed to be allowable over the relied upon reference for at least the same reasons as claim 18.

Response to the 35 U.S.C. §103(a) Rejection

The Office Action rejects claims 8-11, 16, 17 and 21 under 35 U.S.C. §103 (a) as being unpatentable over Vareljian in view of Smith and Kenworthy. Applicant respectfully traverses this rejection in view of the reasons stated below.

Claims 8-11 depend from base claim 6, claims 16 and 17 depend, either directly or indirectly, from base claim 12 and claim 21 depends indirectly from base claim 18. Applicant believes that base claims 6, 12 and 18 include features that are patentable over the relied upon references and that the dependent claims are allowable for at least the same reasons as the base claims.

Response to the 35 U.S.C. §103(a) Rejection

The Office Action further rejects claims 6-11, 16 and 21 under 35 U.S.C. §103 (a) as being unpatentable over Marcos et al. in view of Dankberg et al. and Kenworthy. Applicant respectfully traverses this rejection in view of the reasons stated below.

It has already been established that neither Marcos nor Kenworthy teach a transceiver where the receiver has one over-the-air interface standard and the transmitter has another over-the-air interface standard. The reference of Dankberg teaches that a first user receives a signal directly from a second user along with a relayed signal from that same second user. Dankberg teaches that both the direct signal and the relayed signal are the same standard but may differ in amplitude and phase based on propagation delays and noise. Dankberg does not teach signals having first and second standards together in one transceiver as claimed in Applicant's claims 6, 12 and 18.

Therefore, the relied upon references of Marcos, Kenworthy and Dankberg taken singularly or in combination do not teach all of the features in Applicant's claimed subject matter. Accordingly, these references cannot make obvious Applicant's base claims 6, 12 and 18.

Claims 7-11 depend from base claim 6, claim 16 depends from base claim 12 and claim 21 depends indirectly from base claim 18. Applicant believes that base claims 6, 12 and 18 include features that are patentable over the relied upon references and that the dependent claims are allowable for at least the same reasons as the base claims.

Conclusion

The foregoing is submitted as a full and complete response to the Office Action mailed February 21, 2003, and it is submitted that claims 6 -21 are in condition for allowance. Reconsideration of the rejection is requested. Allowance of these claims is earnestly solicited.

A one-month time extension is requested and a fee of $110 may be paid from deposit account #02-2666. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

If the Examiner believes that there are any informalities that can be corrected by an Examiner's amendment, a telephone call to the undersigned at (480) 552-1388 is respectfully solicited.

Respectfully submitted,
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